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Elasto-plastic behaviour in titanium alloys

Thursday 22 June 2023 09:30 (15 minutes)

Neutron and synchrotron diffraction studies under mechanical stress in titanium alloys Ti-64 (near α -alloy), Ti-6246 (α + β alloy), Ti-5553 (near β -alloy) and Ti-38644 (β -alloy) were performed to investigate the deformation mechanisms. In particular, the determination of single-crystalline elastic constants derived from the measured lattice strains in the polycrystalline specimens will be presented. These results have been used further to quantify the load partitioning in the elastic regime between the softer bphase and stiffer aphase. In addition, diffraction data were collected along the entire elastic and plastic regime to determine the evolution of lattice strains, texture and phase compositions.

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